



Health Advisory: Safe Eating Guidelines for Fish and Shellfish from Lake Berryessa and Putah Creek, including Lake Solano (Napa, Yolo, and Solano Counties)

a fact sheet by the
Office of Environmental Health Hazard Assessment
California Environmental Protection Agency

June 2006

Why has OEHHHA developed “Safe Eating Guidelines” for fish from Lake Berryessa and nearby Putah Creek, including Lake Solano?

Virtually all fish contain detectable levels of mercury; however, studies indicate that certain types of fish in Lake Berryessa and Putah Creek contain elevated levels of mercury that could pose a health risk to people who eat them frequently. The State of California issued a fish consumption advisory for Lake Berryessa in 1987. Since that time, more samples of fish have been collected as part of studies on mercury contamination in the Putah Creek watershed.

The Office of Environmental Health Hazard Assessment (OEHHHA) used the additional information from these studies to evaluate the health effects of eating fish from Lake Berryessa and Putah Creek, and to issue an updated advisory for Lake Berryessa and new fish consumption guidelines for Putah Creek. The new guidelines reflect current scientific information on mercury, and have been finalized following a public comment period during which the public reviewed and provided comments on the report and safe eating guidelines.

The safe eating guidelines include a “best choices” table that identifies, as appropriate, fish containing very low levels of mercury that can be eaten up to three times a week. The guidelines also include a table with fish that should be eaten in moderation (one meal per week or less). One set of guidelines applies to women of childbearing age and children age 17 years and younger, who are particularly sensitive to methylmercury (the most prevalent form of mercury in fish). A second set applies to women beyond their childbearing years and men.

Because methylmercury affects the developing nervous system, women of childbearing age and children age 17 years and younger should carefully follow guidelines for eating these fish.

Does the water in the lake or creek pose a hazard?

No. As explained below, mercury tends to accumulate in fish, but not in the water itself. Physical contact with the water is safe.

Why is mercury found in fish from this region?

Mercury contamination in fish is a global problem. Emissions from volcanoes and coal-burning power plants release mercury into the air, where it can be carried worldwide before being deposited into oceans, lakes, and reservoirs. In northern California,

however, the presence of mercury in fish is also a legacy of mining. The California Coastal Range is rich in mineral deposits, including cinnabar. Prospecting for gold and mercury has been an important activity in the area since the mid-1800s. The East Mayacmas Mining District in northwest Napa and southern Lake counties was one of the principal mercury mining areas in the Putah Creek watershed between the 1870s and 1944. The area is rich in geothermal springs, which are also important sources of mercury and other ores. Mercury from natural weathering and mercury-containing waste from mines can contaminate nearby water bodies.

Once mercury accumulates in bottom sediments in lakes or other water bodies, bacteria convert mercury into a more toxic form known as methylmercury, which fish take in from their diet. Methylmercury can build up in fish to concentrations many thousands of times greater than mercury levels in the surrounding water. Because methylmercury accumulates in fish slowly over time, larger fish of a species usually have higher concentrations of methylmercury than smaller fish from the same water body. Predatory fish, such as bass, tend to have higher levels of methylmercury than other fish, such as trout, which feed on aquatic insects and other invertebrates.

What are the human health effects of methylmercury found in these fish?

Developing fetuses and children are especially sensitive to methylmercury. Pregnant women and nursing mothers can pass methylmercury to their babies through the placenta and through breast milk. Excessive exposure to methylmercury can affect the nervous system in children, leading to subtle decreases in learning ability, language skills, attention, and memory. These effects may occur through adolescence as the nervous system continues to develop. For this reason, a more conservative set of guidelines applies to women of childbearing age and children up to and including age 17.

In adults, the most subtle symptoms of methylmercury toxicity are numbness and tingling sensations in the hands and feet or around the mouth. The levels of methylmercury found in fish from Lake Berryessa and Putah Creek should not result in the health effects described above if the proposed guidelines are followed.

Can I still eat fish from these water bodies?

Yes. Fish are a nutritious part of the diet when eaten in moderate amounts. By following OEHHA's safe eating guidelines, you can still enjoy eating fish from these water bodies while minimizing the risk of health effects from exposure to methylmercury. Because of the increased sensitivity to methylmercury during development, it is particularly important for women of childbearing age and children to follow the guidelines provided and select the types of fish that are lowest in mercury. For example, women of childbearing age and children can eat up to three meals a week of trout or Sacramento blackfish from Putah Creek, provided no other fish are eaten that week.

Choose fish that are low in mercury from the "Best Choices" guidelines to continue to enjoy the benefits of eating sport fish.

There are more options for women beyond childbearing age and men. The safe eating guidelines allow for women beyond childbearing age and men to eat as many as three meals a week of trout or kokanee from Lake Berryessa; or three meals a week of

trout, Sacramento blackfish, bluegill or other sunfish, catfish, sucker, carp, or crayfish from Putah Creek. Of these, trout and blackfish had the lowest levels of mercury and could be eaten daily.

Because almost all ocean and freshwater fish contain some level of methylmercury, consider your total fish consumption when making choices about how much and which types of fish to eat. For example, the federal government advises women of childbearing age and children aged 17 years and younger not to eat shark, swordfish, king mackerel, or tilefish, because these ocean species tend to have high mercury levels. Women of childbearing age and children can safely eat up to two meals a week of a variety of commercial fish, but only if they do not eat sport fish from local water bodies in the same time period. If you eat fish caught from other water bodies in California, check whether OEHHA has issued an advisory for that location. If there are no consumption guidelines for a specific water body, fish caught from that location should be eaten in limited amounts.

Where can I get more information?

For information on mercury and other contaminants in sport fish in California, contact:

Office of Environmental Health Hazard Assessment (OEHHA)

1515 Clay Street, 16th Floor

Oakland, California 94612

Telephone (510) 622-3170 FAX (510) 622-3218

Or visit the OEHHA Web site at: <http://www.oehha.ca.gov> (Click on “Fish”)

For information on mercury in commercial fish, contact:

U.S. Food and Drug Administration

Center for Food Safety and Applied Nutrition

1 (888) SAFEFOOD or <http://www.cfsan.fda.gov/~dms/admehg3.html>

SAFE EATING GUIDELINES

FISH CONSUMPTION FROM LAKE BERRYESSA

Fish are nutritious and should be part of a healthy, balanced diet. The American Heart Association recommends healthy adults eat at least two meals of fish a week. It is important, however, to choose your fish wisely. OEHHA recommends that you choose fish to eat that are low in mercury such as those in “Best Choices.” Because some other types of fish from Lake Berryessa contain higher levels of mercury, OEHHA also provides additional recommendations below that you can follow to reduce the risks from exposure to methylmercury in fish.



Women of childbearing age, pregnant or breastfeeding women, and children 17 years and under

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| BEST CHOICES UP TO 3 MEALS A WEEK |
| <i>There are no best choices for this population at Lake Berryessa</i> |
| EAT IN MODERATION NO MORE THAN 1 MEAL A WEEK |
| Bluegill or other sunfish; trout; or kokanee |
| AVOID NO MORE THAN 1 MEAL A MONTH |
| Largemouth, smallmouth, or spotted bass; catfish; and chinook (king) salmon |



Women beyond childbearing age and men

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| BEST CHOICES UP TO 3 MEALS A WEEK |
| Trout or kokanee |
| EAT IN MODERATION NO MORE THAN 1 MEAL A WEEK |
| Largemouth, smallmouth, or spotted bass; catfish; chinook (king) salmon; bluegill or other sunfish |

- Incomplete information suggests that carp should only be eaten in limited amounts.
- **CONTACT WITH THE WATER IS SAFE.**
- **EAT SMALLER FISH OF LEGAL SIZE.** Fish build up mercury in their bodies as they grow.
- **MEAL SIZE DEPENDS ON BODY WEIGHT.** Meals are based on a 160-pound adult eating 8 ounces of fish (6 ounces after cooking) — about the size of two decks of cards. If you weigh less than 160 pounds, eat smaller portions of fish. Serve smaller meals to children.
- **DO NOT EAT MORE THAN ONE OF THE LISTED FISH SPECIES DURING THE SAME TIME PERIOD** unless you are eating from the Best Choices category. If you eat fish from one place following the advisory, avoid eating fish from other sources during the same time period.
- **CONSIDER THE FISH YOU BUY FROM STORES AND RESTAURANTS.** Women of childbearing age and children can safely eat up to 2 meals a week of a variety of fish purchased in stores or restaurants*, **OR** use this guide for eating fish caught from this water body. In a week when you eat 2 meals of fish purchased from stores or restaurants, avoid eating fish caught from a local water body. Commercial fish such as shrimp, king crab, scallops, farmed catfish, wild ocean salmon, oysters, tilapia, flounder, and sole generally contain some of the lowest levels of mercury. *Women of childbearing age and children should not eat shark or swordfish, which contain the most mercury.
- **FISH FROM OTHER WATER BODIES MAY ALSO CONTAIN MERCURY.** Not all water bodies in California have been tested. With the exception of ocean or river-run salmon or steelhead, which may be consumed more frequently, fish caught from places without an advisory should be eaten in limited amounts.

For more information, contact OEHHA at 510 622-3170 or visit www.oehha.ca.gov

SAFE EATING GUIDELINES

FISH CONSUMPTION FROM PUTAH CREEK

Fish are nutritious and should be part of a healthy, balanced diet. The American Heart Association recommends healthy adults eat at least two meals of fish a week. It is important, however, to choose your fish wisely. OEHHA recommends that you choose fish to eat that are low in mercury, including “Best Choices” fish caught from Putah Creek, including Lake Solano.



Women of childbearing age, pregnant or breastfeeding women, and children 17 years and under

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| BEST CHOICES UP TO 3 MEALS A WEEK |
| Trout or Sacramento blackfish |
| EAT IN MODERATION NO MORE THAN 1 MEAL A WEEK |
| Largemouth, smallmouth, or spotted bass, bluegill or other sunfish, carp or goldfish, catfish (including bullheads), crappie, sucker, hitch, or crayfish |



Women beyond childbearing age and men

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| BEST CHOICES UP TO 3 MEALS A WEEK |
| Trout*, Sacramento blackfish*, bluegill or other sunfish, catfish (including bullheads), sucker, carp or goldfish, or crayfish |
| EAT IN MODERATION NO MORE THAN 1 MEAL A WEEK |
| Largemouth, smallmouth, or spotted bass, crappie, or hitch |

* May be eaten daily by women beyond childbearing age and men

- Incomplete information suggests that pikeminnow should only be eaten in limited amounts.
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